FIG.1

FROM 32
FIGURE 1

TEST RESULT TRANSLATOR
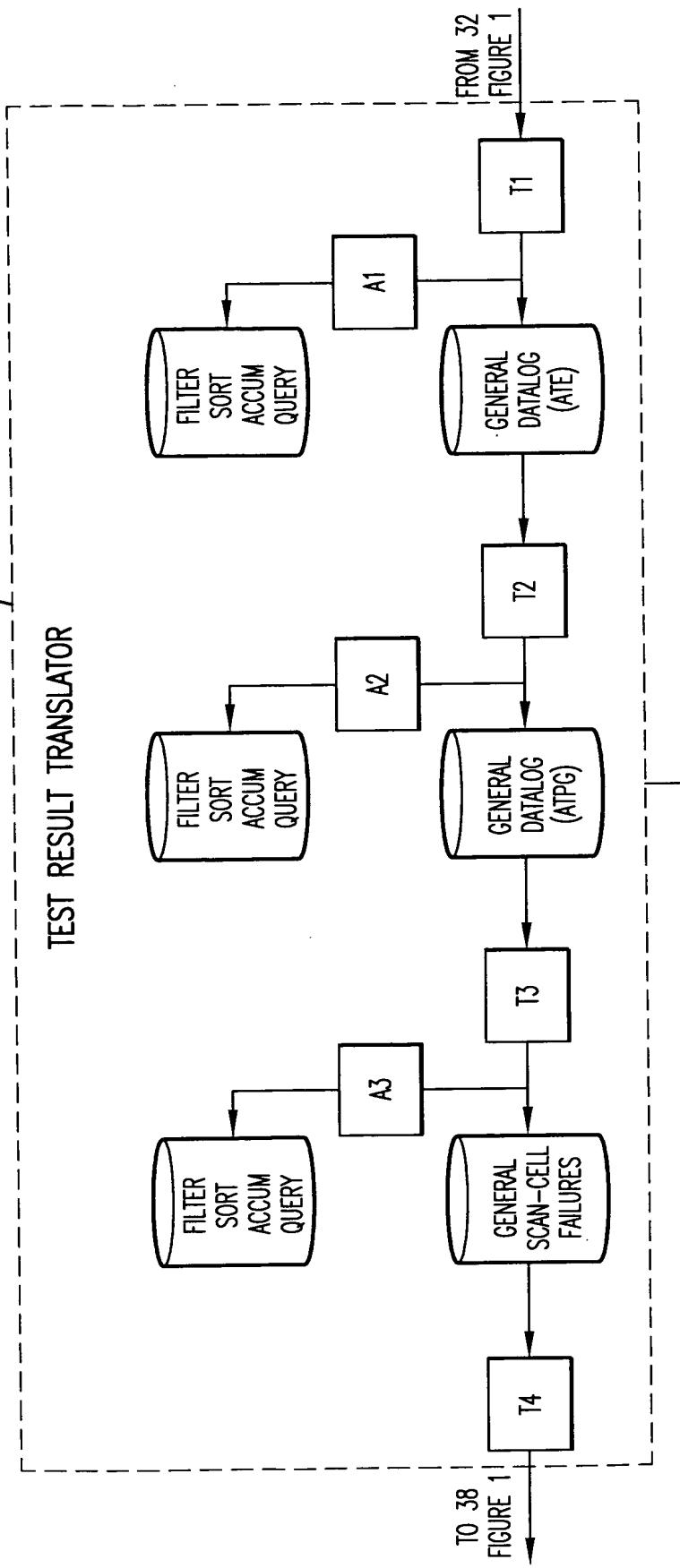
50

T1

A1

FILTER
SORT
ACCUM
QUERY

GENERAL
DATALOG
(ATE)

T2

A2

FILTER
SORT
ACCUM
QUERY

GENERAL
DATALOG
(ATPG)

FROM 42
FIGURE 1

T3

A3

FILTER
SORT
ACCUM
QUERY

GENERAL
SCAN-CELL
FAILURES

T4

TO 38
FIGURE 1

FIG.2

70

DIAGNOSIS RESULT TRANSLATOR

FILTER
SORT
ACCUM
QUERY

GENERAL
DIAGNOSIS
RESULTS

A5

T5

FROM 38
FIGURE 1

FIG.3

```
┌─────────────────────┐
│   GENERATE  ATPG    │⟋~100
│    TEST  PATTERNS   │
└─────────────────────┘
          │
┌─────────────────────┐
│   TRANSLATE  ATPG   │⟋~102
│   PATTERNS  TO  ATE │
└─────────────────────┘
          │
┌─────────────────────┐
│     TEST  DEVICE    │⟋~104
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│    CAPTURE  ATE     │⟋~106
│   PATTERN  FAILURES │
└─────────────────────┘
          │
      ┌────────┐
      │  T1/A1 │⟋~108
      └────────┘
          │
          ▼
        ╱─────────╲
  NO   ╱   VIEW    ╲
◄─────╱ GEN ATE PATTERNS╲
      ╲   FAILURES?    ╱
       ╲─────────────╱
          │ YES
          ▼
┌─────────────────────┐
│   DISPLAY  GEN ATE  │⟋~110
│   PATTERN  FAILURES │
└─────────────────────┘
          │
      ┌────────┐
      │  T2/A2 │⟋~112
      └────────┘
          │
          ▼
        ╱─────────╲
  NO   ╱   VIEW    ╲
◄─────╱ GEN ATPG PATTERN╲
      ╲   FAILURES?    ╱
       ╲─────────────╱
          │ YES
          ▼
┌─────────────────────┐
│  DISPLAY  GEN ATPG  │⟋~114
│   PATTERN  FAILURES │
└─────────────────────┘
          │
          ▼
        TO 116
       FIGURE 5
```

FIG.4

FROM 114
FIGURE 3

T3/A3 —116

VIEW
GEN SCAN CELL
FAILURES?   NO

YES

DISPLAY SCAN CELL
PATTERN FAILURES —118

T4/A4 —120

DIAGNOSE SCAN FAILURES —122

T5/A5 —124

VIEW
LOGICAL
DEFECT DATA?   NO

YES

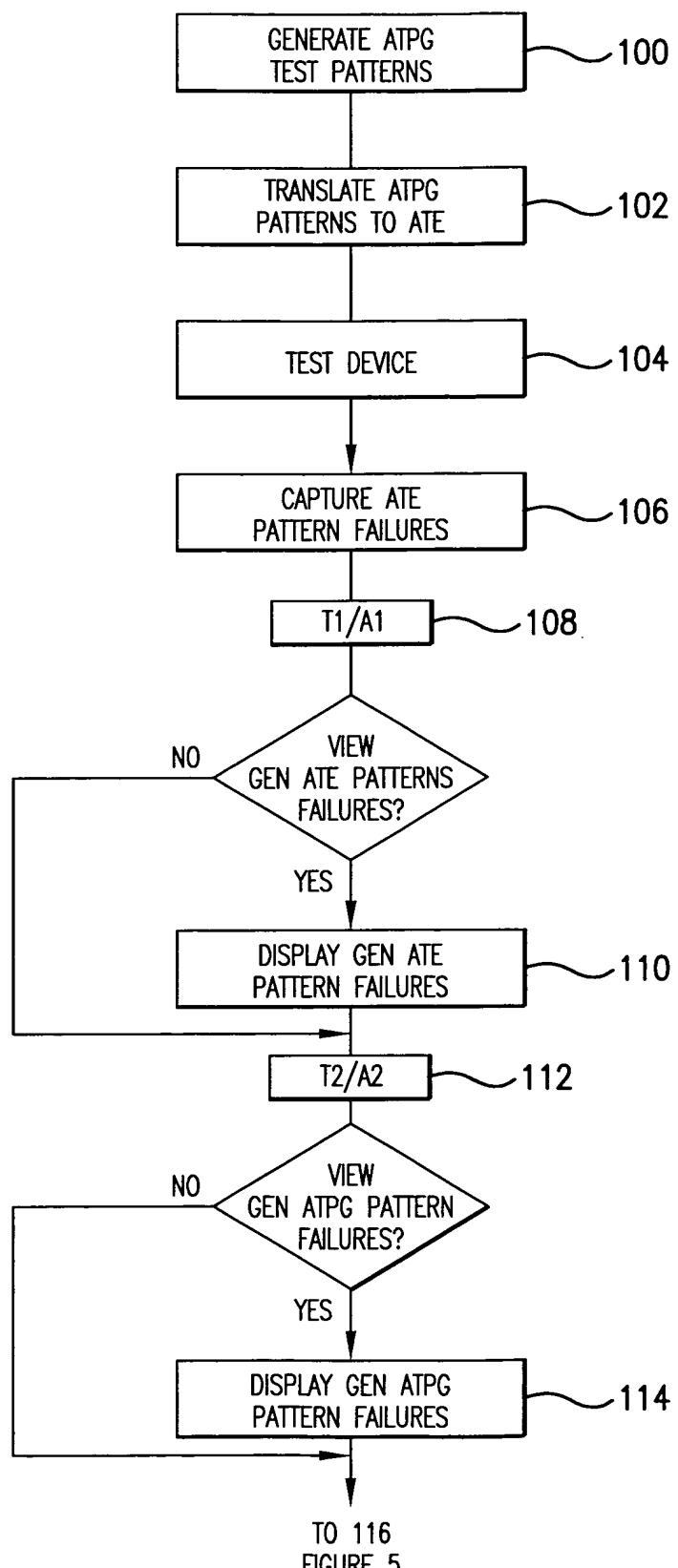DISPLAY LOGICAL DEFECT/
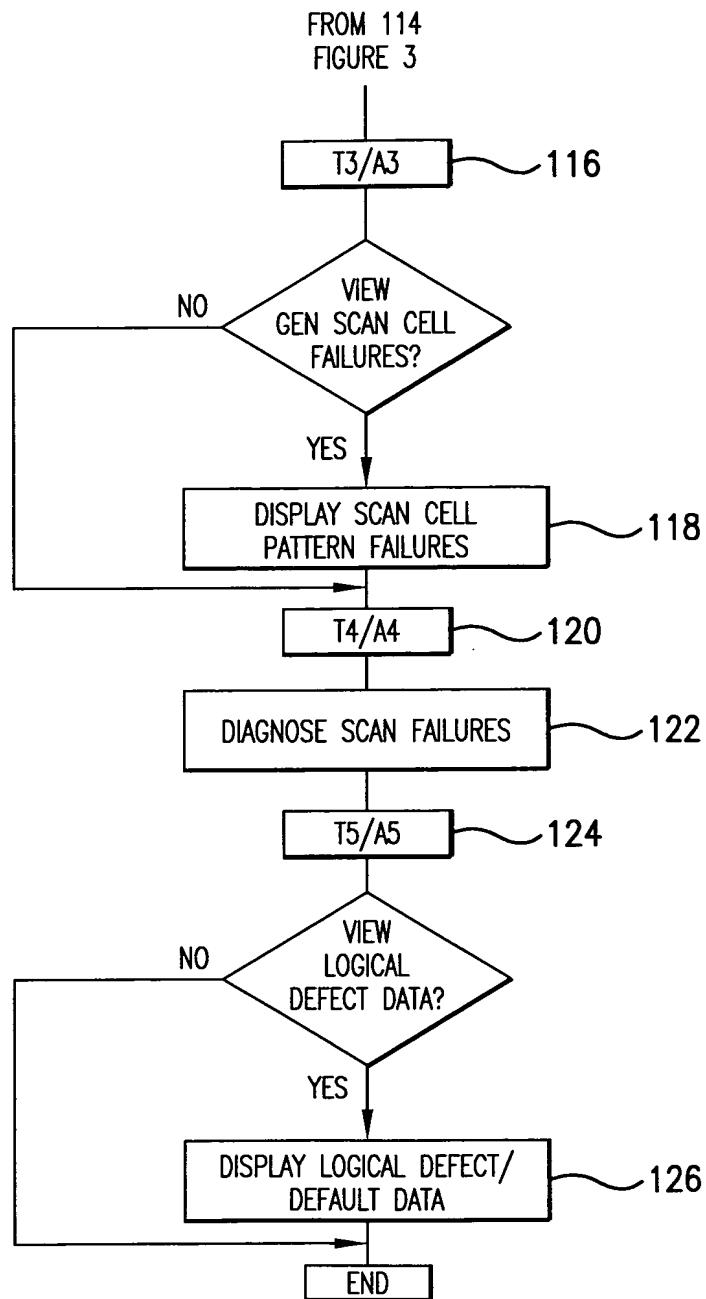DEFAULT DATA —126

END

FIG.5

FIG.6

Interactive Scan Diagnosis Prototype

File View Look and Feel Help

Connect to Tester | Connect to Diagnosis Tool | Disconnect | Status | Status: Connected to IMAGE tester: tiger-S2

Debug Scan Test 2 at Site 0

Device: device 5

Cumulative Results for Test Scan Test 2 at Site 0

Accumulation by Scan Cell and Pattern

Scan Fail Table
- ☐ Last Result
- ☑ Accumulated Result

Count	Chain	Cell	Pattern	Devices		
3	chain6	188	265	Data: Scan Test 2	Diagnose this failure	Data:Scan Tes...
3	chain6	93	495	Data: Scan Test 2		Data:Scan Tes...
3	chain6	187	797	Data: Scan Test 2-1, Data: Scan Test 2-3,	Data:Scan Tes...
3	chain6	92	338	Data: Scan Test 2-1, Data: Scan Test 2-3,	Data:Scan Tes...
3	chain6	90	561	Data: Scan Test 2-1, Data: Scan Test 2-3,	Data:Scan Tes...

device 1:Data Scan Test 2-1
device 2:Data Scan Test 2-2
device 3:Data Scan Test 2-3

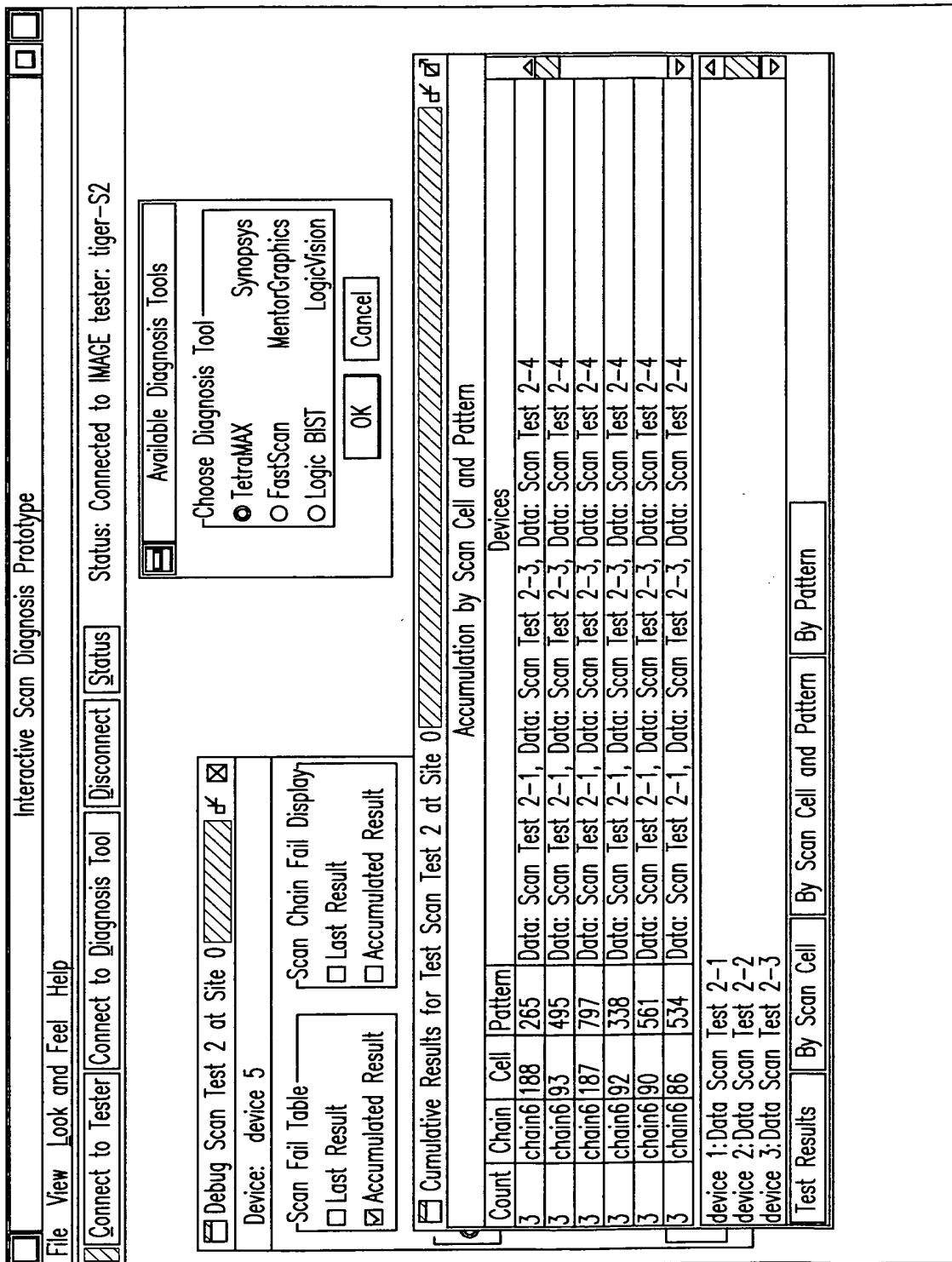Select Accumulation Mode
◉ Auto ○ Manual

Test Results | By Scan Cell | By Scan Cell and Pattern | By Pattern

Cumulative Scan Chain Display for Test Scan Test 2 at Site 0

Zoom View Type

scan 101 — scan out1
scan 102 — scan out2
scan 103 — scan out3
scan 104 — scan out4
scan 105 — scan out5
scan 106 — scan out6
scan 107 — scan out7
scan 108 — scan out8
scan 101 — scan out1
scan 102 — scan out2
scan 103 — scan out3

Interactive Scan Diagnosis Prototype

File View Look and Feel Help

Connect to Tester | Connect to Diagnosis Tool | Disconnect | Status | Status: Connected to IMAGE tester: tiger-S2

Debug Scan Test 2 at Site 0

Device: device 5

Scan Fail Table
☐ Last Result
☑ Accumulated Result

Scan Chain Fail Display
☐ Last Result
☐ Accumulated Result

Available Diagnosis Tools

Choose Diagnosis Tool

○ TetraMAX   Synopsys
○ FastScan   MentorGraphics
○ Logic BIST   LogicVision

[OK]   [Cancel]

☑ Cumulative Results for Test Scan Test 2 at Site 0

Accumulation by Scan Cell and Pattern

Count	Chain	Cell	Pattern	Devices					
3	chain6	188	265	Data: Scan Test 2-1,	Data: Scan Test 2-3,	Data: Scan Test 2-4
3	chain6	93	495	Data: Scan Test 2-1,	Data: Scan Test 2-3,	Data: Scan Test 2-4
3	chain6	187	797	Data: Scan Test 2-1,	Data: Scan Test 2-3,	Data: Scan Test 2-4
3	chain6	92	338	Data: Scan Test 2-1,	Data: Scan Test 2-3,	Data: Scan Test 2-4
3	chain6	90	561	Data: Scan Test 2-1,	Data: Scan Test 2-3,	Data: Scan Test 2-4
3	chain6	86	534	Data: Scan Test 2-1,	Data: Scan Test 2-3,	Data: Scan Test 2-4

device 1:Data Scan Test 2-1
device 2:Data Scan Test 2-2
device 3:Data Scan Test 2-3

Test Results | By Scan Cell | By Scan Cell and Pattern | By Pattern

FIG.7

FIG.8

Interactive Scan Diagnosis Prototype

File View Look and Feel Help

| Connect to Tester | Connect to Diagnosis Tool | Disconnect | Status | Status: Connected to IMAGE tester: tiger-S2

Diagnosis Tool

Device Narr	Test Result	Diagnosis Result
☑ device 1	Data: Scan Test 2-1	Diagnosis_Result_1
☑ device 3	Data: Scan Test 2-3	Diagnosis_Result_2
☑ device 4	Data: Scan Test 2-4	Diagnosis_Result_3

Show Result
☑ Accumulated Diagnosis Result ☐ Raw Diagnosis Result

☐ Show GUI

| Diagnose | Close |

Accumulated Fault Equivalents

Count	Fault Equivalent	Node	Fault Type	Detection Code	Devices
3	fe2	/fpu 1/u5/prod 1 mult 378 ix4405/Y	0	DS	diagnosis result 1,diagnosis result 2,....
		/fpu 1/u5/prod 1 mult 378 ix4405/A	1	DS	diagnosis_result_1,_diagnosis_result_2,....
		/fpu 1/u5/ix2828/Y	1	DS	
		/fpu 1/u5/ix2828/A2	0	DS	
		/fpu 1/u5/ix2828/A1	0	DS	
		/fpu 1/u5/ix2828/A0	0	DS	
1	fe3	/risc 1/ix4163/Y	1	DS	diagnosis_result_2
		/risc 1/ix4163/B0	1	DS	
		/risc 1/ix5939/Y	1	DS	

| Accumulate by Defect | Accumulate by Fault Equivalent | Accumulate by Node |